

## LESSON 7.3 • Multiplication and Exponents

1. a.  $4^7$

b.  $(-3)^7$

c.  $(-2)^{15}$

d.  $8^9$

e.  $x^{13}$

f.  $n^{22}$

g.  $(-5)^{10}$

h.  $a^{(p+q)}$

i.  $7^8$

2. a.  $4^{25}$

b.  $8^{14}$

c.  $x^{36}$

d.  $y^{30}$

e.  $5^{21}$

f.  $(-3)^6$

g.  $z^{16}$

h.  $10^{27}$

i.  $0.5^{10}$

j.  $100^{24}$

k.  $(-6)^{20}$

l.  $t^{14}$

3. a.  $12x^2$

b.  $12m^3$

c.  $-20n^6$

d.  $x^3y^6$

e.  $40s^7w^9$

f.  $9m^{10}n^8$

g.  $64x^{24}$

h.  $16m^{10}$

i.  $n^{30}p^{10}$

j.  $-27m^{12}n^{21}$

k.  $625x^8y^4z^{20}$

l.  $243x^5y^{20}z^{30}$

m.  $-6x^5y^7$

n.  $8x^5y^7z^4$

o.  $-27x^{12}y^9$

4. a.  $-250$

b.  $-243$

c.  $-216$

d.  $1800$

5. a.  $x^{11}y^{18}$

b.  $16m^{14}n^{18}$

c.  $-128s^{14}w^{15}$

d.  $16a^{26}b^{12}$

5a

$$\underline{(xy^2)^3} \underline{(x^2y^3)^4}$$

$$= \underset{x \cdot x \cdot x}{x^3} \underset{y \cdot y \cdot y \cdot y \cdot y \cdot y}{y^6} \cdot \underset{x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x}{x^8} \cdot \underset{y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y}{y^{12}}$$

$$= x^{11} \cdot y^{18}$$

$$(2x^4)^6$$

$$2^6 x^{24}$$

$$64x^{24}$$

$$(-3x^2)^3$$

$$(-3)^3 (x^2)^3$$

$$-27x^6$$

$$x \cdot x \quad x \cdot x \quad x \cdot x$$

3/1/10

① Consider the following table of data

day	bacteria
1	4
4	108

Ⓐ If the growth were linear, write an equation to fit the data.

Ⓑ If the growth were exponential, write an equation to fit the data.

② Simplify

Ⓐ  $\underline{3}x^2y^3 \cdot \underline{2}x^5y$

$6x^7y^4$

Ⓑ  $\frac{\cancel{8} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{y} \cdot \cancel{y} \cdot \cancel{y} \cdot \cancel{y} \cdot \cancel{y} \cdot \cancel{y}}{\cancel{2} \cdot \cancel{x} \cdot \cancel{y} \cdot \cancel{y}}$

$4x^4y^4$

Ⓒ  $\frac{5^9}{5^6}$

$\frac{\cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5}}{\cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5}}$

$5^3$

$$b^n \cdot b^m = b^{n+m}$$

$$(ab)^n = a^n b^n$$

$$(a^n)^m = a^{m \cdot n}$$

$$\frac{b^n}{b^m} = b^{n-m}$$

$$(1, 4)$$

$$(4, 108)$$

$$m = \frac{108 - 4}{4 - 1} = \frac{104}{3} \approx 34.\overline{66}$$

$$y = 34.\overline{66}(x - 1) + 4$$

$$(1, 4)$$

$$(4, 108)$$

$$y = ab^x$$

$$y = \frac{4}{3} \cdot 3^x$$

$$\textcircled{a} \frac{3^3 \cdot 5^3}{3 \cdot 5^2}$$

$$\textcircled{b} \frac{4^4 \times 6}{4^2 \times 3}$$

$$\textcircled{c} \frac{5^{15} \left(1 + \frac{0.08}{12}\right)^{24}}{5^{11} \left(1 + \frac{0.08}{12}\right)^{18}}$$

$$\frac{\cancel{3} \cdot \cancel{3} \cdot \cancel{3} \cdot \cancel{5} \cdot \cancel{5} \cdot \cancel{5}}{\cancel{3} \quad \quad \cancel{5} \cdot \cancel{5}}$$

$$(3^2 \cdot 5^1)$$

$$\frac{\cancel{4} \cdot \cancel{4} \cdot \cancel{4} \cdot \cancel{4} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x} \cdot \cancel{x}}{\cancel{4} \cdot \cancel{4} \quad \quad \cancel{x} \cdot \cancel{x} \cdot \cancel{x}}$$

$$(4^2 \times 3)$$

$$5^4 \left(1 + \frac{0.08}{12}\right)^6$$

I had \$6.<sup>00</sup> and every week it doubled, how much would it be worth in 4 weeks?

$$\begin{array}{r} 6 \\ \times 2 \end{array}$$

$$\begin{array}{r} 12 \\ \times 2 \end{array}$$

$$\begin{array}{r} 24 \\ \times 2 \end{array}$$

$$\begin{array}{r} 48 \\ \times 2 \end{array}$$



$$y = 6(2)^x$$

$$y = 6(2)^4$$

I had \$\_\_\_\_\_ and doubled it for 4 weeks. At the end of 4 weeks I had \$144. How much did I start with?

$$144 \div 2 = 72$$

(4)                      (3)

$$72 \div 2 = 36$$

(2)

$$36 \div 2 = 18$$

(1)

$$18 \div 2 = 9$$

(start)

7.5 #1-5

HW

7.5 #8-10